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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT PAPER NUMBER

2631

DATE MAILED: 06/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/406,788

Applicant(s)

OVADIA ET AL.

Examiner

Kevin M. Burd

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3, 6-8, 10, 12, 19-23, 27, 28, 30, 32 and 39-54 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 51-53 is/are allowed.
- 6) ☒ Claim(s) 1-3, 6-8, 10, 12, 19, 27, 28, 30, 32, 39, 44 and 54 is/are rejected.
- 7) ☒ Claim(s) 23, 43 and 45-50 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

1. This office action, in response to the amendment filed 1/18/2005, is a non-final office action.

### ***Response to Arguments***

2. Applicant's arguments, see the remarks on pages 12-21, filed 1/18/2005, with respect to the rejections of claims 1-3, 6-8, 10, 12, 19-23, 28, 30, 32 and 39-54 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, new grounds of rejection are made in view of Mujtaba (US 2002/0010895) and Meyer (US 5,802,115).

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1-3, 6, 8, 10, 12, 19, 27, 28, 30, 32 and 39 are rejected under 35 U.S.C. 102(e) as being anticipated by Mujtaba (US 2002/0010895).

Regarding claim 1, Mujtaba discloses a system comprising an arithmetic logic unit (figure 9, item 82) operating in a split mode to determine trace bits for Viterbi

decoding of a binary convolution code (figure 9, item 90 and paragraph 0030). Registers store the output from the arithmetic logic unit (paragraph 0032) and the trace back unit 92 generates an output bit.

Regarding claims 2 and 3, the registers store the bits that are used in the trace back (paragraphs 0032, 0042 and 0043). The registers store the bits in sequential order so they can be read out properly.

Regarding claims 6 and 7, the registers are shift registers (paragraph 0032).

Regarding claims 8 and 27, Mujtaba discloses a system comprising an arithmetic logic unit (figure 9, item 82) operating in a split mode to determine trace bits for Viterbi decoding of a binary convolution code (figure 9, item 90 and paragraph 0030). Registers store the output from the arithmetic logic unit (paragraph 0032) and the trace back unit 92 generates an output bit. The trace back RAM will store data from numerous stages before pushing out older bits to be replaced with current bits (paragraphs 0042 and 0043).

Regarding claims 10, 12, 28, 30 and 32, each memory location in the RAM 162 is a memory cell, which will be used to store the trace back information.

Regarding claims 19 and 39, Mujtaba discloses a system comprising an arithmetic logic unit (figure 9, item 82) operating in a split mode to determine trace bits for Viterbi decoding of a binary convolution code (figure 9, item 90 and paragraph 0030). Registers store the output from the arithmetic logic unit (paragraph 0032) and the trace back unit 92 generates an output bit. The trace back RAM 162 will store data from numerous stages before pushing out older bits to be replaced with current bits

(paragraphs 0042 and 0043). The trace back is initiated and the trace back starts at stage 63 to push out the bit at stage 0.

4. Claims 44 and 54 are rejected under 35 U.S.C. 102(e) as being anticipated by Meyer (US 5,802,115).

Regarding claim 44, Meyer discloses a method of tracing back states of convolution codes using Viterbi decoding (column 1, lines 6-9 and column 6, lines 32-38). The trace bits are stored in memory 20'. A decision is modified at each clock cycle to trace back a decision and the decision is stored in a memory where the write operation is achieved every k cycles (column 5, line 60 to column 6, line 5. K is two or more (column 5, lines 66 to column 6, line 1). All of the bits are stored.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 20-22 and 40-42 are rejected under 35 U.S.C. 103(a) as being unpatentable over Mujtaba (US 2002/0010895) in view of Meyer (US 5,802,115).

Regarding claims 20-22 and 40-42, Mujtaba discloses the decoder and method of decoding described above in paragraph 3. Mujtaba does not disclose the each stage of the trace back takes as few as two clock cycles. Meyer discloses a method of tracing

Art Unit: 2631

back states of convolution codes using Viterbi decoding (column 1, lines 6-9 and column 6, lines 32-38). The trace bits are stored in memory 20'. A decision is modified at each clock cycle to trace back a decision and the decision is stored in a memory where the write operation is achieved every k cycles (column 5, line 60 to column 6, line 5. K is two or more (column 5, lines 66 to column 6, line 1). All of the bits are stored. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the teachings of Meyer into the decoder and method of decoding of Mujtaba. The value of k is selected to obtain a trade off between a desired reduction of the write frequency and the complexity in realizing the memory bus (column 6, lines 3-5). Mujtaba discloses the length of the trace back is 64 (paragraph 0042).

### ***Allowable Subject Matter***

6. Claims 51-53 are allowed.
7. Claims 23, 43 and 45-50 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Thursday 9 am - 5 pm.

Art Unit: 2631

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad Ghayour can be reached on (571) 272-3021. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kevin M. Burd  
6/7/2005

**KEVIN BURD**  
**PRIMARY EXAMINER**